

ART. V.—*New and Remarkable Bees.*

By TARLTON RAYMENT.

[Read 10th July, 1930; issued separately 9th September, 1930.]

The late Mr. D. Best bequeathed the whole of his large collection of insects to the National Museum, Melbourne. The bees are not well represented, for the naturalist favoured other groups, but among them is a remarkable female, the label of which bore only the number "504." No information is available of either the locality of this specimen or the date when it was found. It is probable that as Mr. Best did little if any collecting beyond Victoria, the specimen is a native of this State.

Perkins (*Proc. Hawaiian Ent. Soc.*, ii, p. 29, 1908), described a unique male from the Violet Range, W.A., and seeing some affinity to the American genus *Pasiphae*, he erected the genus *Neopasiphae*, and named the species *mirabilis*. Since that time less than half a dozen males have been taken, at long intervals, but the female remained unknown. I was, therefore, very pleased indeed to find among Best's few honey-gatherers a new species of *Neopasiphae*, a female.

The second bee is no less remarkable since it, too, is the first to be added to another genus of Perkins. The genus *Ceratina* is well-known in America, and once more being impressed with its affinity to a bee which he collected at Bundaberg, Qld., he erected the genus *Neoceratina*, and named the species *australensis* (*Ann. Mag. Nat. Hist.* [8], xi, p. 117, 1912). No other specimen has been recorded, so it was interesting to find, among the unworked material, another *Neoceratina*, a female, collected by Mr. Charles Barrett at Townsville, Queensland, in August, 1920. Perkins describes his bee as having five segments in the maxillary palpus, as against six in *Ceratina*, but Barrett's specimen appears to have six segments, though the mouth-parts are not in good order, and I may be in error. I have been able to study these insects owing to the courtesy of the Director, Mr. J. A. Kershaw, and the Entomologist, Mr. J. Clark, of the National Museum, Melbourne.

Division COLLETIFORMES.

Family PROSOPIDIDAE.

NEOPASIPHAE INSIGNIS, sp. nov.

(Text-Fig. 1.)

*Female*.—Length, 10 mm. approx.

Head transverse, black, bright, with close puncturing of medium size; a few light brown hairs; face-marks are confined to the light clypeus and supra-clypeal area; frons rough, subrugose owing to

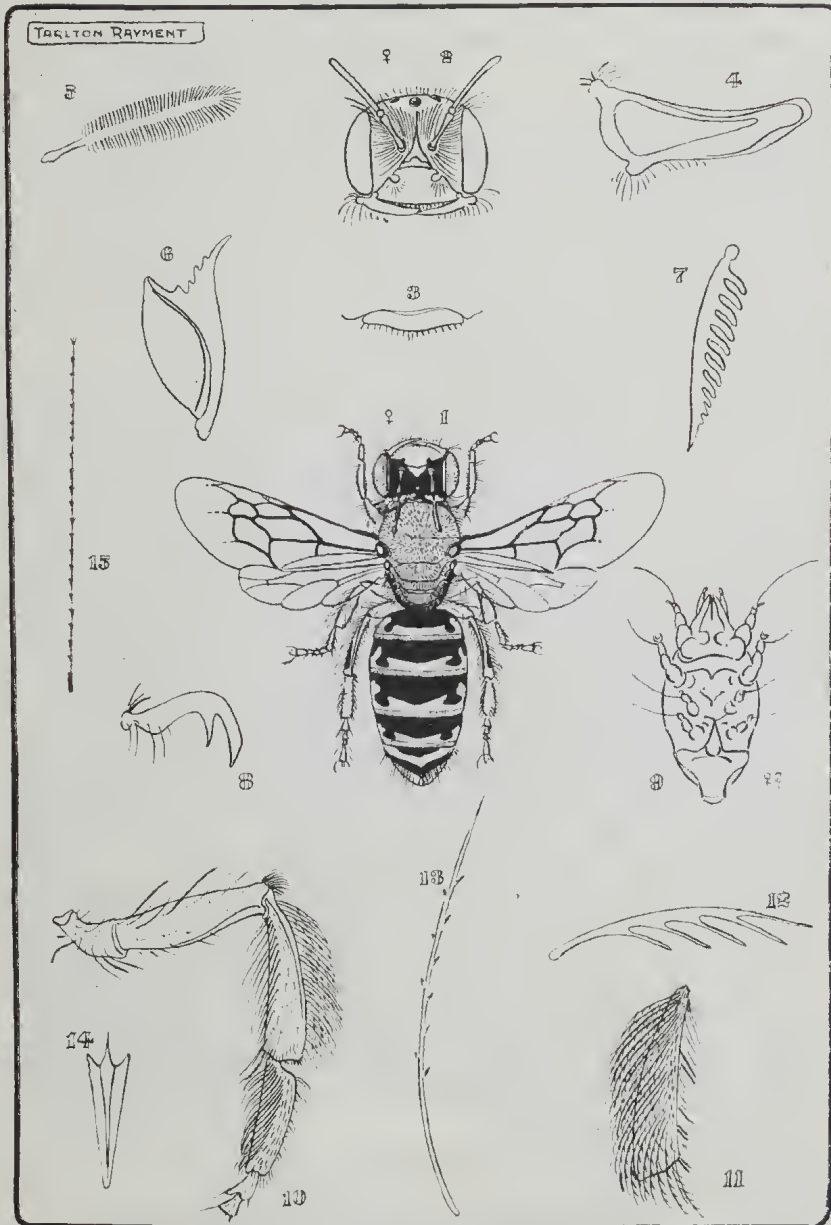


FIG. 1.

1. Adult female of *Neopasiphae insignis*, sp. nov. 2. Frontal view of head of female. 3. The labrum or lip is very narrow. 4. The jaw of the female is not notched, but is spoonlike. 5. One of the short stout plumose hairs of the mesothorax. 6. The strigil or antenna-cleaner is of Prosopoid form. 7. The hind tibial spur is toothed like that of *Colletes*. 8. The claws are bifid, and the empodium large. 9. Acarid mite, ventral view, taken from hairs of this bee. 10. Inside surface of hind femur, tibia and tarsi. 11. Outside view of hind tibia, showing harvesting hairs. 12. Forked hair from tibia, highly magnified. 13. One of the long hairs of the femur. 14. A butterfly scale found on the bee. 15. A hair from the entanglement surrounding the mites.

the puncturing being pear-shaped, and not so close; clypeus creamy-yellow, large, bright, convex, two small black spots laterally, a cluster of creamy, plumose hairs below these, numerous punctures of medium size; supraclypeal area black, with a large, creamy-yellow patch, an exceedingly fine carina reaching the median ocellus, a few punctures and light hairs; vertex sharply developed; the rather large, brown ocelli being placed in a low curve; compound eyes of a yellowish brown colour, the anterior margins parallel; genae black, finely cancellate, a few light-brown hairs; labrum wide, but very shallow, yellow suffused with pale amber; mandibulae creamy-yellow, with amber margins and tips, no defined teeth; antennae submoniliform, black, the scape creamy-yellow beneath, the flagellum almost orange beneath.

Prothorax black, well developed, closely covered with punctures of medium size; tubercles black, but the hairs adjacent have been stuck together by immersion in some liquid; mesothorax black, dull, excessively punctured, with scattered, short, plumose hair; scutellum similar in colour and structure to mesothorax; postscutellum similar to scutellum, except that the punctures are longer; metathorax black, bright, a narrow lunate area, bounded by a rim, encloses a number of fine anastomosing rugae. Abdomen: dorsal segments, black, dull, excessively punctured, hind margins amber, creamy-yellow bands, broad laterally, with an indentation and a lobe; the marks resemble those of a European *Anthidium*. Ventral segments black, punctured, with amber margins.

Legs coxae, trochanters, and basal ends of femora, and inside surface of tibiae black, apical ends of femora, and outside surface of tibiae creamy yellow, anterior tibiae yellowish-amber, much golden hair. Tarsi: basitarsi broad, yellow; other tarsal joints short and amber-coloured; claws dark amber, bidentate, pulvillus large, reddish; velum convex; hind calcariae pale amber, with twelve strong teeth diminishing in size; tegulae amber, with yellowish patches and a tuft of hair; wings yellowish, prismatic, anterior measuring 8 mm. nervures clear ferruginous, the straight basal running beyond the nervulus, the two recurrents entering the second cubital cell at the ends. Cells: the two large cubitals are of equal size, the radial long, narrow and rounded on costa; pterostigma ferruginous, long and narrow; hamuli eleven in number, of moderate development.

Locality.—Probably Victoria. Best's label "510." Type in National Museum.

Allies.—This bee is clearly close to *N. mirabilis* Perkins, which was described from Western Australia, but the abdominal bands are of different shape.

Though no observations are available, the anatomical structure shows that the nest is a shaft in the ground, the cradle a skin cell laid down from the tongue, and the stores a stiff batter of honey and pollen formed into a ball. A few acarid mites were obtained from the fleece of this bee.

## MEROGLOSSA MIRANDA, sp. nov.

(Text-figs. 2 and 3.)

*Male*.—Length, 8 mm. approx.

Head narrow, of oily brightness, black, numerous punctures; face-marks dull cream-colour, acutely pointed above the insertion of the scapes; frons with numerous punctures and a fine longitudinal carina reaching to the median ocellus; clypeus dull cream-colour, finely aciculate, anterior edge narrowly fulvous; supra-clypeal area black, with a small transverse dull-cream mark; vertex with wine-pink ocelli in a triangle, facial foveae short and straight; compound eyes dark-brown, converging below; genae black, numerous punctures, long silvery hair; labrum oval, very pale-fulvous; the maxillary palpi being nearly twice the length of the antennae; mandibulae very pale amber, dark red apically; glossa short and pointed; antennae very long, scape stout, blackish above, fulvous beneath.

Prothorax black, a cream stripe, dilated at ends but interrupted in middle; tubercles cream colour; mesothorax black, bright, rough, with numerous punctures, a few white hairs posteriorly; scutellum and postscutellum similar to mesothorax, postscutellum with white hair; metathorax black, bright, a small area with slightly coarser sculpture; abdominal dorsal segments black, hind margins dull reddish, a fine cancellate sculpture, on one a short line of white hair laterally, a short fringe on all others.

Legs black, basal third of tibiae cream, also the knees, a few white hairs; tarsi fulvous, the basitarsi of hind legs cream; claws bifid, reddish; hind calcariae finely serrated, pale; tegulae fulvous posteriorly, cream anteriorly; wings hyaline, iridescent, anterior 5 mm.; nervures blackish-brown, basal slightly arched, second cubital receiving both recurrents. Cells: second cubital slightly contracted at apex; pterostigma long, narrow, brownish; hamuli widely spaced, eight in number.

Locality.—Milly Milly station, West Australia (J. Glauert, 10th May, 1922). Type in the West Australian Museum.

Allies.—Not close to any described species. The exceedingly long palpi and the extraordinary abdominal processes distinguish it as one of the most remarkable bees yet described. It is very hairy for this genus.

## EURYGLOSSA INCONSPICUA Ckll.

Ann. Mag. Nat. Hist. [8], xii, p. 512, 1913.

*Male*.—Length, 5 mm. approx.

Head broad, not bright, a few short white hairs, obscurely greenish; face marks nil; frons with a minute sculpture; clypeus obscurely greenish, coarse scattered punctures, a minute sculpture, a few short white hairs; supra-clypeal area similar to clypeus; vertex with tessellate pattern, and clear glassy ocelli; compound



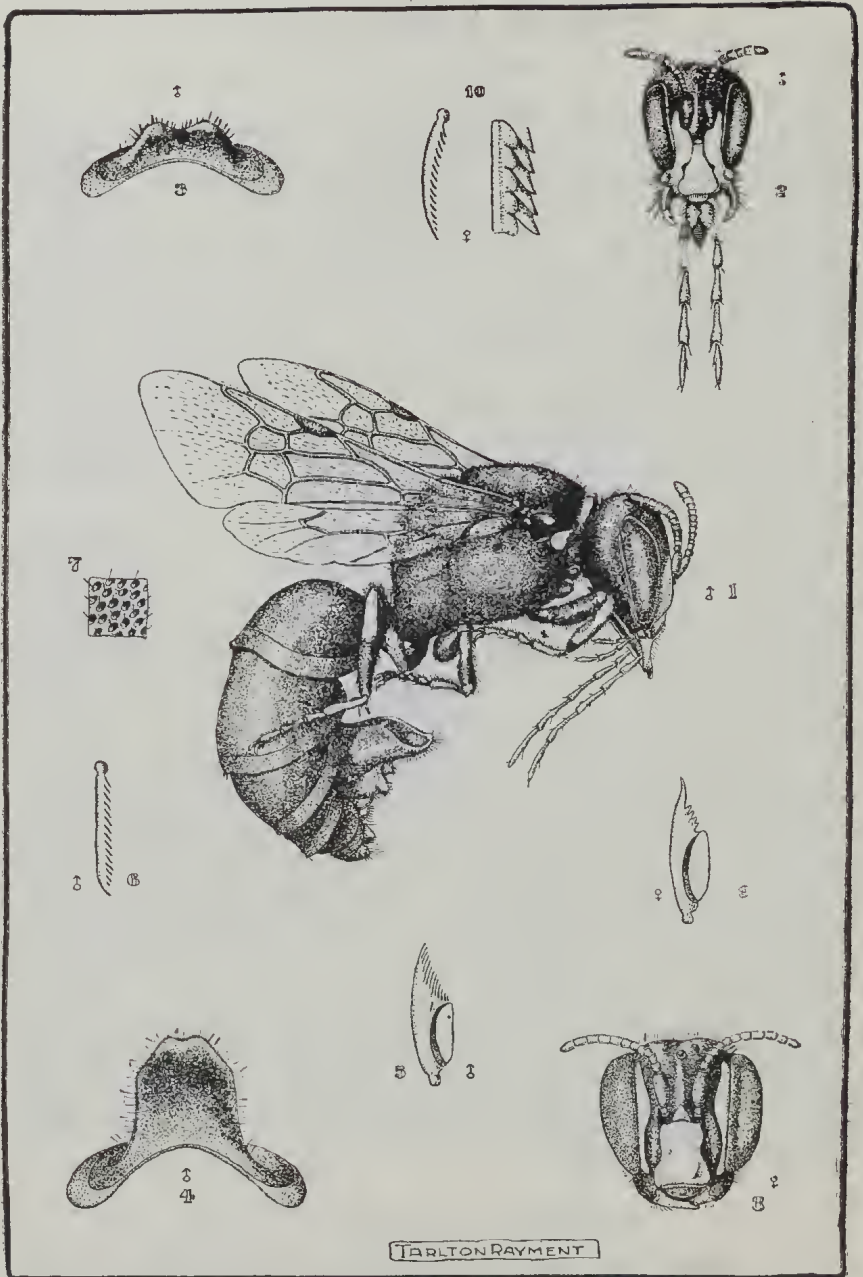


FIG. 2.

1. Adult male *Meroglossa miranda*, sp. nov. 2. Anterior view of head-capsule with the exceedingly long maxillary palpi extruded. 3. Nodose ridge on fourth ventral segment. 4. Posterior view of huge process on third ventral segment. 5. Strigil or antenna-cleaner of male. 6. Hind calcar or tibial spur. 7. Portion of the tegument of mesothorax. 8. Front view of head-capsule of female *M. impressifrons*. 9. Strigil of female. 10. Calcar of female, with serrations highly magnified.

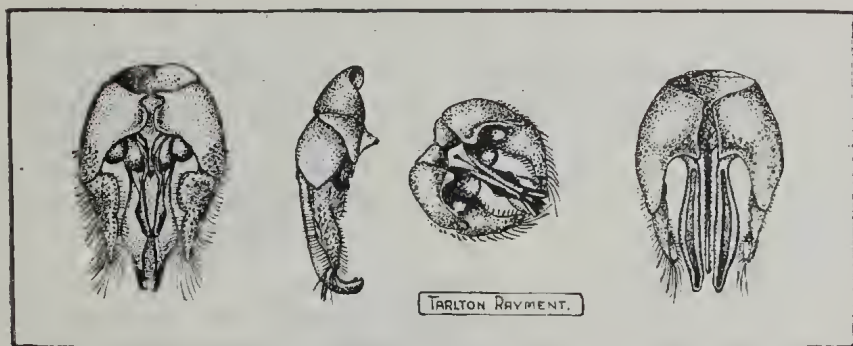


FIG. 3.

Four views, dorsal, lateral, oblique and ventral, of genitalia of *Meroglossa miranda*, sp. nov.

eyes blackish-claret; genae with a few stiff hairs; labrum black; mandibulae black at bases, reddish apically; antennae submoniliform, black.

Prothorax not visible from above; a fringe of long white hair surrounds the tubercles, black; mesothorax bright, dark bluish-green, with a minute tessellate sculpture, scattered punctures of medium size, a few dull-white hairs on disc; scutellum similar to mesothorax; postscutellum black, rough, a few long white hairs; metathorax black, bright, with a large area covered with a fine sculpture. Abdomen: dorsal segments black, polished, hind margins broadly but obscurely lighter, a finely lined transverse sculpture; ventral segments similar to dorsal surface.

Legs: coxae, trochanters femora, and hind tibiae black. knees and other tibiae light ferruginous, sparse long white hair; tarsi light ferruginous with white hair; claws reddish-amber; hind calcariae pale amber, finely serrated; tegulae dark ferruginous; wings hyaline, iridescent; nervures dark sepia, heavy, basal far short of nervulus; cells: the large second cubital is contracted at top; pterostigma dark sepia; hamuli few and weak.

Locality.—Sandringham, Port Phillip, Victoria (March, 1928, Rayment). Allotype in the National Museum.

The female was described from Purnong, South Australia.

Biological Data.—This may be called the Summer *Euryglossa*; one brood, consisting of both sexes, emerges during the hottest months. Nests are in the sandy loam, and the males hover over the burrows in great numbers. These bees visit the flowers of *Goodenia ovata*.

Division COLLETIFORMES.

Family COLLETIDAE.

PARACOLLETES PICTA, sp. nov.

*Female*.—Length, 11 mm. approx.

Head transverse, a brilliant blue-green with metallic irides-

cence; face-marks nil; there is a fairly dense covering of whitish plumose hair; frons highly polished, closely punctured, punctures somewhat pear-shaped; clypeus rather flat, polished, well-punctured; supraclypeal area similar to clypeus; vertex highly polished, very iridescent, densely and coarsely punctured, whitish hair; compound eyes claret-brown; genae densely covered with pear-shaped punctures, some long whitish plumose hair; labrum blackish; mandibulae dark amber; antennae submoniliform, beneath testaceous towards apex.

Prothorax just visible as a bright blue-green line; tubercles black, with a thick fringe of cinereous plumose hair; mesothorax polished blue-green, coarsely well-punctured, hair whitish at sides, but intermixed with black on disc; scutellum coloured like mesothorax, but punctures larger and closer, hair similar; postscutellum darker, finely granular, a tuft of whitish hair, small punctures; metathorax with small enclosed area highly polished and impunctate. Abdomen: dorsal segments brilliant bluish-green, highly polished, closely and coarsely punctured, hind margins narrowly brown, the anal fimbria of a brilliant golden orange; ventral segments of similar colour to dorsal surface, a few light and dark hairs.

Legs black or obscurely brownish, with pale plumose hair, floccus and scopa of a drab colour; tarsi fulvous beneath; claws reddish-amber; hind calcariae dark brown, with a number of long fine teeth; tegulae very dark, with only very obscure brownish tint; wings not entirely clear, iridescent, anterior 7 mm.; nervures dark sepia, radius rounded on costa, basal just short of nervulus; cells; cubitals contracted at top; first recurrent nervure entering second cubital cell at basal third, second recurrent entering third cubital at apical corner; pterostigma dark brown; hamuli of moderate development.

Locality.—Charleville, Queensland (G. F. Hill, 13th November, 1927). Type in the National Museum.

Allies.—Prof. Cockerell states this is close to *P. elegans* Smith, which is distinguished by ochreous hair at sides of thorax, lighter legs, and impunctate polished postscutellum.

PARACOLLETES MACULATUS, sp. nov.

(Text-fig. 4.)

*Female*.—Length, 10 mm. approx.

Head broad, black, bright, dull-white plumose hair; face-marks nil; frons rugose in middle, but finely granular at margins of orbits; clypeus prominent, scattered coarse punctures, polished, scattered whitish hair, a fringe of stiff fulvous hair; supraclypeal area similar to clypeus, but a fine carina rises to and surrounds the median ocellus; vertex finely granular, with wine-red ocelli in a curve; compound eyes blackish-claret, slightly converging below; genae rugose, with dull-white long plumose hair, but not well developed; labrum black; mandibulae black basally, reddish apically; antennae black, submoniliform.

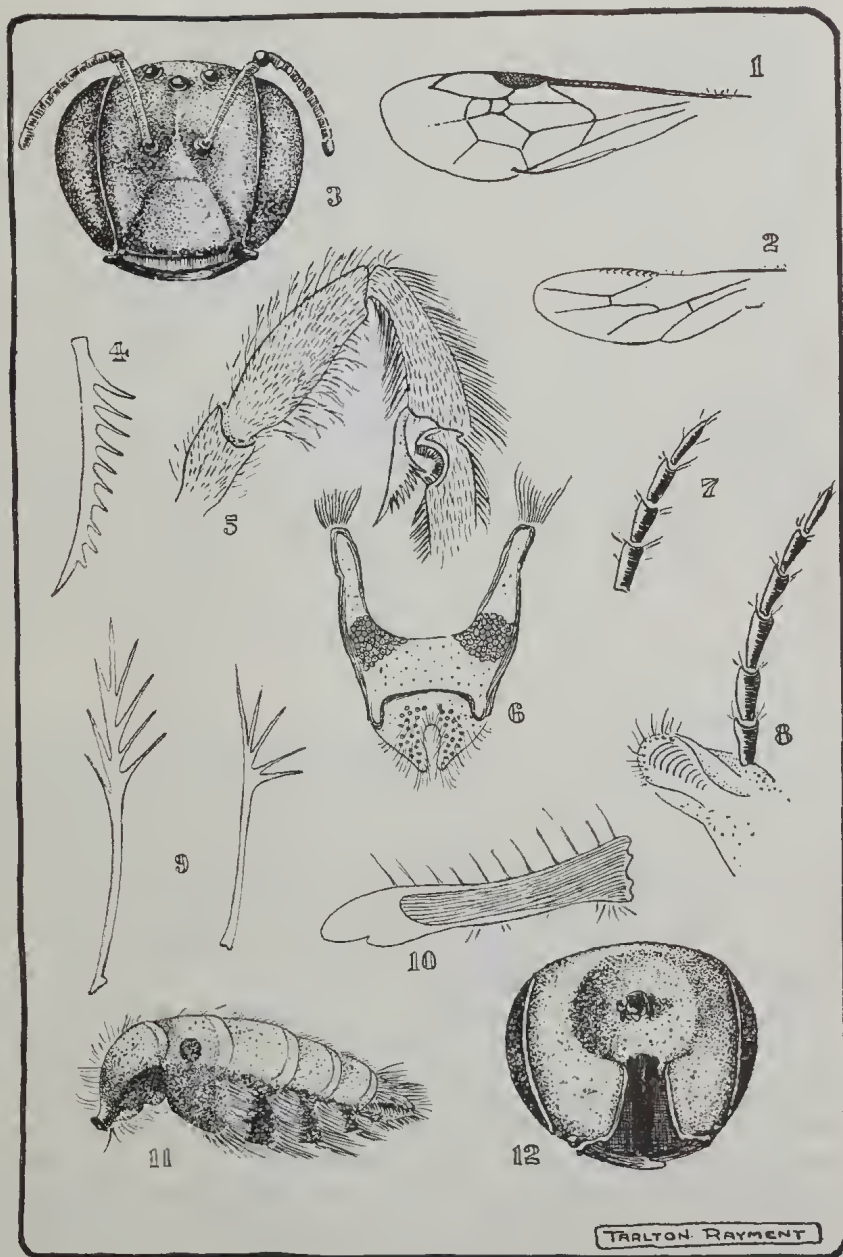


FIG 4.

1. Anterior wing of *Paracolletes maculatus*, sp. nov. 2. Posterior wing of female. 3. Front view of head-capsule of female. 4. Hind calcar of female. 5. Portion of anterior leg, showing the strigil or antennal scraper and antennal brush. 6. The apical dorsal segment of the abdomen. 7. Labial palpus has four segments. 8. Maxillary palpus has six segments. 9. Forked hairs from the legs of the female. 10. Mandible or jaw. 11. Lateral view of abdomen, showing the macula. 12. View of back of head-capsule of female.



Prothorax not visible from above; a fringe of drab-coloured hair surrounds the thorax; tubercles black, bright, a crescentic patch of light-drab short plumose hair; mesothorax black, bright, a minute tessellate pattern, scattered punctures of medium size, scattered hair of blackish tint on disc; scutellum similar to mesothorax; postscutellum dull, finely granular, black, a few long plumose drab-white hairs; metathorax black, bright, a very small lunate area with a few coarse converging rugae superimposed on a minute sculpture of tessellate pattern. Abdomen: dorsal segments red, sixth segment black, basal more or less blackish in some specimens, hind margins broadly darker, the second with a black spot at the sides, a few drab hairs laterally, a naked plate at apex; ventral segments; wider black bands, each fringed with drab hair.

Legs black, hind tibia with a floccus of beautiful plumose hair of drab tint; tarsi black, drab hair; claws reddish-amber; hind calcariae pale amber, with ten long spines gradated in size; tegulae polished black, with a fine tessellate pattern; wings sub-hyaline, iridescent, anterior 7 mm.; nervures dark ferruginous, second recurrent meeting third intercubitus, first recurrent entering second cubital cell at apical third; cells; second and third cubitals contracted at top; pterostigma dark amber; hamuli eight in number, of moderate development.

*Male*.—Length, 9 mm. approx.

Head black; wide, hair more ochreous than drab; face-marks nil, but granular sculpture becomes coarser at sides; frons with some anastomosing rugae; clypeus has close coarse puncturing and a minute sculpture, long plumose hair; supraclypeal area finely granular, a distinctive area; on the vertex the shafts of the hair are dark; compound eyes blackish claret; genae not well developed in this genus, slightly rugose, with drab plumose hair; labrum black, some specimens show obscure reddish tints; mandibulae black. The tongue is short and wide, of Colletid type; antennae submoniliform, black.

Prothorax not visible from above. A fringe of drab hair surrounds the thorax; tubercles black, and lack the fringe of the female; mesothorax black, finely granular, punctures difficult to find, the shafts of the hair being black; scutellum similar to mesothorax; postscutellum rough, black, hair with black shafts; a feature common to many bees of this genus; metathorax black, with a narrow lunate area enclosed by a fine rim, a few coarse irregular short rugae. Abdominal dorsal segments, basal black, red margin; all the others red, hind margins obscurely lighter; ventral segments red, with broad black margins.

Legs black, hair golden; tarsi black, hair more golden; claws reddish-amber; hind calcariae pale amber, finely serrated; tegulae polished black; wings sub-hyaline, iridescent, anterior 7 mm.; nervures dark amber, the basal being interstitial with nervulus; cells similar to those of female; pterostigma dark amber; hamuli seven in number, of moderate development.

Locality.—Sandringham, Port Phillip, Victoria (12th September, 1926, Rayment). Type (female) and allotype in the National Museum.

Allies.—Prof. Cockerell points out that this species is very close to *P. platycephalus* Ckll., *P. rufoaeneus* and *P. bimaculatus* Smith. The first-named was described from Windsor, Victoria. The palpi of the mouth parts are black, and it seems that a group could be separated on that character. In some New Zealand and Victorian *Paracolletes* the first recurrent nervure is absent, and the two discoidal cells are confluent.

The general appearance of this species is that of a red-bodied *Parasphcodes*.

Biological Data.—There is one brood, composed of both sexes, which emerges in spring. The larvae are carried over the winter, asleep in skin cells. They frequent, and mate on, the flowers of *Leucopogon richiei*, *Myoporum insulare* and *Cryptostemma calendulaceum*. The males are very active, and are much in evidence among the females on the plants specified. Copulation is effected on the flowers, and that is unusual with males of this genus.

ANDRENOPSIS WILSONI, sp. nov.

(Text-fig. 5.)

*Male*.—Length, 9 mm. approx.

Head broad, black, shining; tufts of white appressed hair at sides of clypeus; face-marks dull yellow; frons closely and coarsely punctured, producing a subrugose effect; clypeus shining, with a carina continued up beyond the supraclypeal area; a large amber mark roughly concavo-triangular, coarsely punctured; vertex with wine-pink ocelli, the numerous punctures producing a rugose appearance; compound eyes blackish-brown, almost parallel; genae well punctured, with long silvery plumose hair; labrum reddish; mandibulac amber, reddish apically, two strong teeth; antennae submoniliform, scape fulvous, first joint of flagellum black, others dark above, fulvous beneath, apical joint like a rounded chisel edge.

Prothorax not visible from above; tubercles black, fringed with white hair; mesothorax black, shining, coarsely and closely punctured; scutellum very wide, colour and sculpture of mesothorax; postscutellum triangular, posterior edge standing up sharply; metathorax very small, black, bright, roughened, a fringe of white hair, a rugose area is enclosed by a rim shaped like a Moorish arch, the apex reaching down the angle of truncation. Abdominal dorsal segments dull, closely punctured, ferruginous, a wide dark band on each segment, scattered short white hair; ventral segments ferruginous, with a scopa of white hair.

Legs ferruginous, coxae black, trochanters black, basal portion of hind femora dark, long white plumose hairs; tarsi clear chestnut-red; claws amber, reddish apically; hind calcariae pale amber,

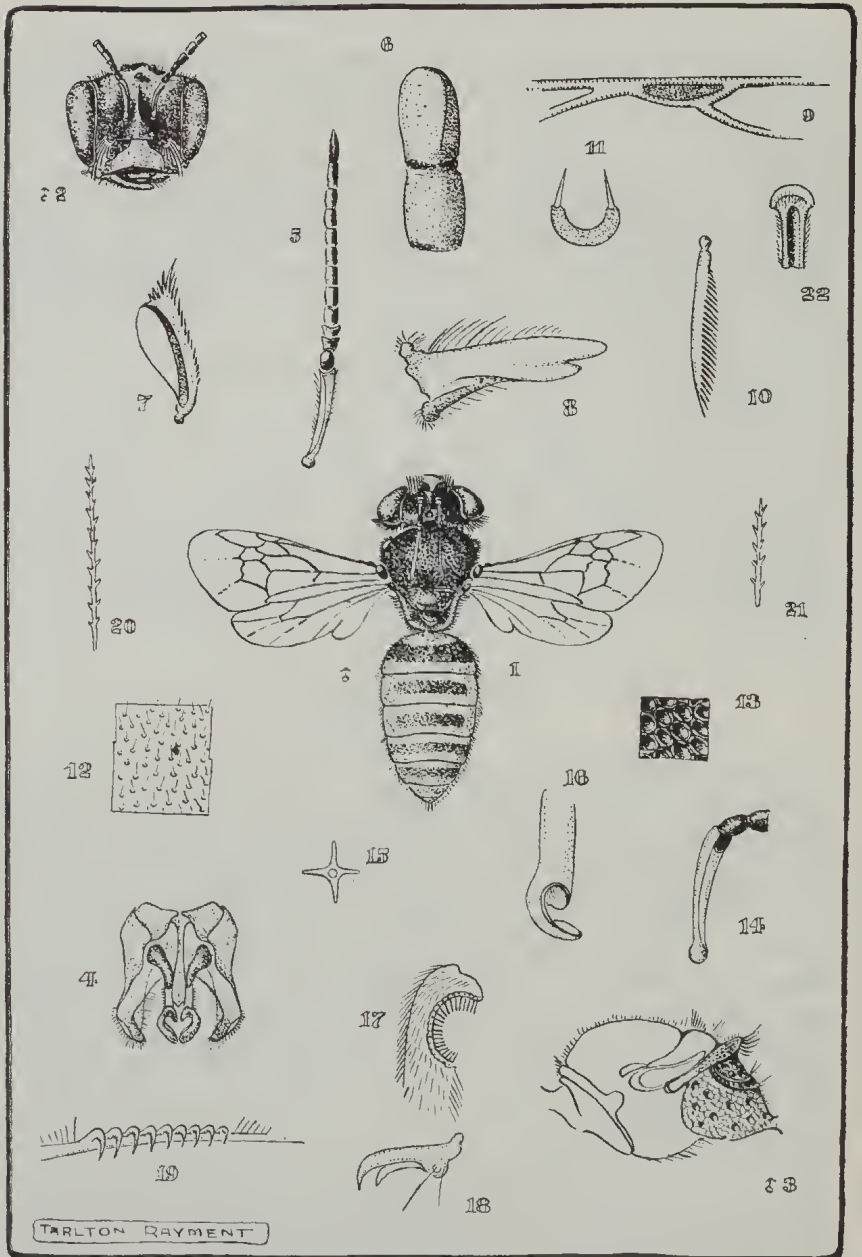


FIG. 5.

1. Adult male *Andrenopsis wilsoni*, sp. nov. (legs not shown). 2. Front view of head-capsule. 3. Lateral view of thorax to show sculpture of metathorax. 4. Genitalia. 5. Antenna. 6. The flattened apical segment of the flagellum. 7. Strigil of the anterior leg. 8. Mandible. 9. The pterostigma is surrounded with a nervure. 10. The hind calcar has long fine serrations. 11. Transverse section of calcar. 12. Portion of wing surface showing fine hairs. 13. Portion of tegument from mesothorax showing sculpture. 14. Apex of scape showing small cavity; compare with *Microglossa*. 15. A plumose hair viewed vertically. 16. Clasper from genitalia more highly magnified. 17. The antennal brush of the anterior leg. 18. One of the bifid claws. 19. The hamuli or wing-hooklets are of moderate strength. 20. Plumose hair from the gena or cheek. 21. Plumose hair from the abdomen. It will be noticed that these are Colletid bees, with only two cubital cells, and the plumosity of the body-hairs is very short. 22. The genitalia has a titillatum of the type of *Paracolletes*.

with long fine serrations fringing the thick rib; tegulae ferruginous; wings subhyaline, yellowish; anterior 6.5 mm.; nervures dark amber, basal arched and interstitial with nervulus, radius rounded on the costa, first recurrent entering second cubital cell at first third of its length; cells, the two cubitals equal, the second discoidal very large and pentagonal; pterostigma long, very narrow, sepia-coloured; hamuli, ten, of moderate development.

Locality.—Bogong High Plains (5000 ft.), Victoria (10th January, 1928, F. E. Wilson).

Allies.—The neururation of the wings is unusual, but the hairy covering is suggestive of the Colletid bees. While this description was in manuscript Professor Cockerell described the genus, and, consequently, this species is now added to it. This bee is very distinct from *A. flavorufus* Ckll. and *A. velutinus* Ckll. The first was described from Sydney, and the second from Kojarena, Western Australia, and this record adds the genus to the Victorian fauna.

PARACOLLETES RUFA, sp. nov.

(Text-fig. 6.)

*Male*.—Length, 11 mm. approx.

Head very wide, black, bright, a dense covering of long plumose golden hair; face-marks nil; frons shining and hollowed out; clypeus very convex, with numerous punctures of medium size, long hair; supra-clypeal area similar to clypeus; vertex sharply developed, the wine-pink ocelli in a low curve; compound eyes claret-brown, inner orbital margins parallel; genae with long golden plumose hair; labrum reddish-brown; mandibulae long, reddish-amber, black basally and apically, one large tooth and a very small one; antennae with long hair on scape, flagellum almost subserrate, and articulated in such a way that a number of pore organs appear along the side.

Prothorax not visible from above; tubercles covered with dense long, golden hair; mesothorax black, bright, with numerous punctures of medium size, and a dense coat of long golden, beautifully plumose hair, there is a delicate sculpture; scutellum similar to mesothorax; postscutellum difficult to determine owing to the density of the long golden hair; metathorax covered with long plumose hair that hides all sculpture; abdominal dorsal segments clear chestnut red, with scattered long hair of dark colour; ventral segments lighter, with darker margins.

Legs: coxae, trochanters and basal half of femora brown, anterior femora and all tibiae ferruginous, with golden hair, the exterior of hind tibia having blackish hair; tarsi clear ferruginous; claws clear ferruginous; pulvilli black; hind calcariae amber, finely serrated; tegulae clear pale-amber; wings hyaline, iridescent, anterior 7 mm.; nervures dark-amber, first recurrent entering the second cubital at its middle. Cells: the second cubital slightly contracted at the apex, second and third cubitals subequal; pteros-



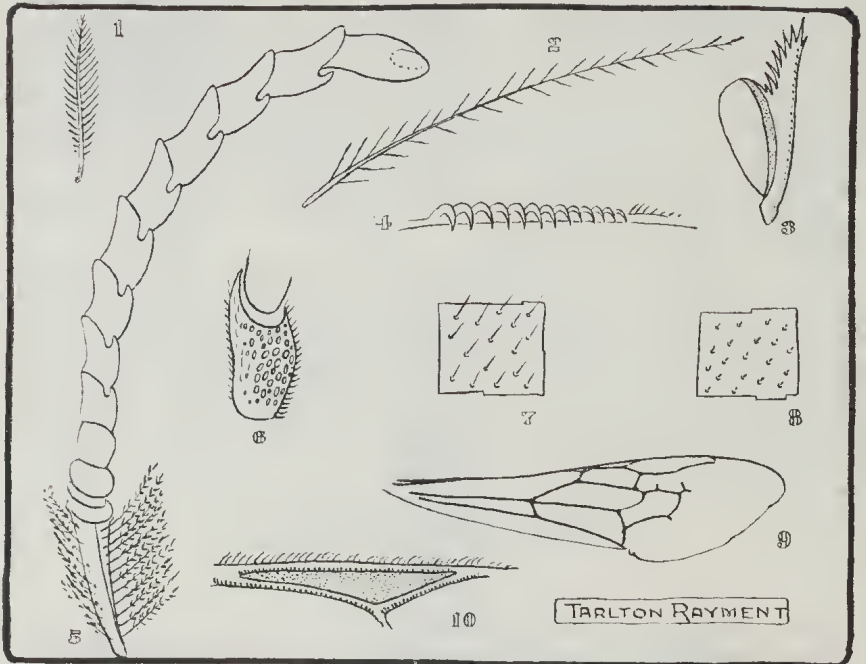


FIG. 6.

1. Small hair from thorax of *Paracolletes ruja*, sp. nov. 2. Long plumose hair from leg. 3. The strigil has fine spines; that of *Trichocolletes* coarse teeth. 4. Hamuli are well developed. 5. The segments of the flagellum are almost subserrate. 6. A segment more highly magnified to show pore organs. 7. Portion of membrane of wing (anterior). 8. Portion of membrane of wing (posterior). 9. The second and third intercubitus nervures of *Paracolletes* wing are often partly obsolete. 10. The pterostigma is surrounded with a nervure; compare with *Andrenopsis*.

tigma honey-coloured, not well developed; hamuli moderately developed.

Locality.—Purnong, South Australia (S. W. Fulton, 30th June, 1911). Type in the collection of the author.

Allies.—Not very close to any described species. It has a slight superficial resemblance to *Paracolletes fimbriatus* Ckll., but is clearly distinct.

#### Division ANDRENIFORMES.

#### Family ANDRENIDAE.

#### Subfamily HALICTINAE.

#### HALICTUS DEMISSUS Ckll.

Proc. Acad. Nat. Sci. Philad., p. 371, 1916. ♀

*Male*.—Length, 6 mm. approx.

Head wide, black, not shining, a good covering of white plumose hair; face-marks nil; frons rough, hair shorter; clypeus prominent, hair longer and dense; on supraclypeal area hair not so

dense; vertex roughly lined, with clear glassy ocelli; compound eyes slightly converging about and below; genae black, with rough lines and a few plumose white hairs; labrum black; mandibulae black; antennae submoniliform, black, obscurely lighter beneath.

Prothorax not visible from above; tubercles with a few long white plumose hairs; mesothorax shining, obscurely greenish, scattered punctures of medium size, a fine tessellate sculpture, a few long white hairs; scutellum similar to mesothorax; postscutellum black; bright, rough; metathorax black, bright, a lunate area, not enclosed by a rim, with a few coarse radiating rugae superimposed on a minute sculpture. Abdominal dorsal segments polished, black, impunctate, minutely striate, except first, a few scattered white hairs; ventral segments similar to dorsal surface, hind margin of second lighter.

Legs slender, black, a few long white plumose hairs; tarsi dark amber with white hair; claws reddish; hind calcariae normal for male *Halictus*, i.e., finely serrate; tegulae light ferruginous; wings clear, iridescent, anterior 3.5 mm.

Nervures dilute sepia, second recurrent, and third intercubitus almost obsolete. Cells: second discoidal and third cubital confluent; pterostigma dark sepia; hamuli few and of weak development.

Locality.—Sandringham, Port Phillip, Victoria (Rayment, December, 1927). Allotype in National Museum, Melbourne.

Allies.—It seems to have some affinity to *H. inclinans*, Smith.

Biological Data.—Both sexes collected on flowers of Cauliflower, and the females are a little larger than the type which had previously been collected from Tasmania. There is a single brood composed of both sexes; the larvae are carried over the winter, but a rapid development takes place in Spring.

## Division XYLOCOPIFORMES.

### Family CERATINIDAE.

(Text-fig. 7.)

#### NEOCERATINA RUBINII, sp. nov.

*Female*.—Length, 7 mm, approx.

Head wide, colour dull orange, tegument bright, with numerous plumose white hairs of medium length; face-marks nil; frons suffused with black, bright, with numerous coarse punctures; clypeus convex, dull orange, coarse punctures, hidden by plumose white hair; supraclypeal area similar to clypeus; vertex roundly developed, coarsely punctured, but the dark suffused area does not extend to the orbital margins; compound eyes claret-brown, bulging, slightly converging below, numerous white, short, peglike hairs appear between the facets; an unusual character; genae conspicuous, with coarse punctures hidden by plumose white hair; labrum dull orange, rectangular; mandibulae reddish-brown,

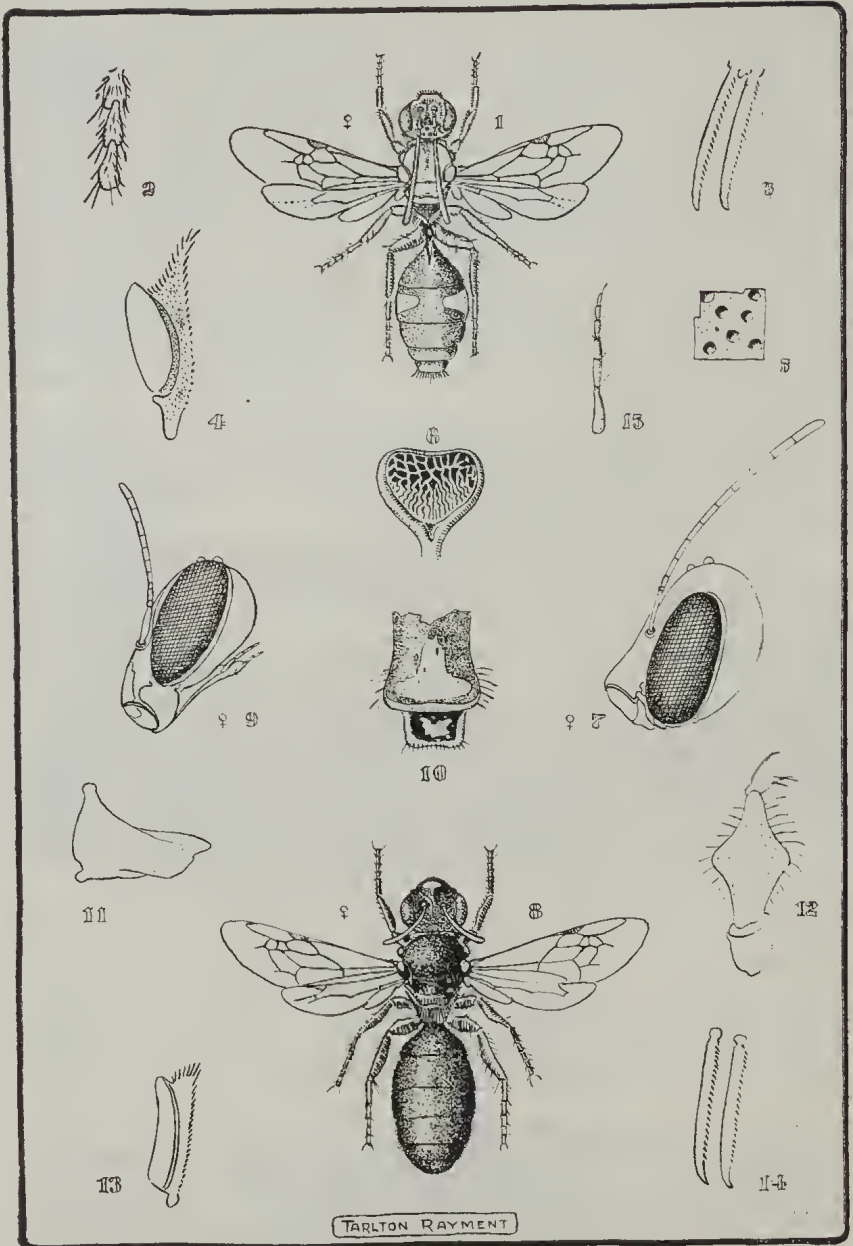


FIG. 7.

1. Adult female of Australian *Neoceratina rubinii*, sp. nov. 2. Tarsal segments from anterior leg. 3. The hind-tibial spurs are finely serrated. 4. The strigil or antenna-cleaner has an acute malus. 5. Portion of the tegument enlarged to show punctures. 6. The enclosed area of the metathorax is rugulose. 7. Lateral view of head, showing long antennae. 8. Adult female of American *Ceratina dupla* Say. 9. Lateral view of head, showing position of labrum. 10. Clypeus and labrum, showing cream markings. 11. The mandible or jaw is short and thick at base. 12. The femora are dilated. 13. Strigil has a short truncated malus. 14. The tibial spurs are characteristic of all bees that excavate and dwell in reeds.

spoonlike and short, with thick bases; antennae extremely long for a female, submoniliform, dull orange, extreme bases of scapes dark.

Prothorax dull orange, coarsely and densely punctured, bright; tubercles clear reddish-amber, polished, with a fringe of white plumose hair; mesothorax polished, reddish-amber, suffused down middle with black, many scattered punctures of large size; scutellum with sculpture like mesothorax, but colour lighter, bigibbous; postscutellum similar to scutellum; metathorax black, two obscure red patches laterally, a subtriangular area, enclosed with a fine rim, with coarse, anastomosing rugae basally, two pointed processes apically and laterally two dense patches of short white plumose hair; abdominal dorsal segments shining, rich reddish-amber, hind margins of five and six broadly lighter, two with deep-cream patch laterally, apex with a fringe of white hair; ventral segments much paler in colour.

Legs dull reddish orange, with scattered pale hair; tarsi paler; claws ferruginous; hind calcariae ferruginous, finely serrated, typical of reed-dwelling bees; tegulae clear, pale yellowish-amber; wings suffused with brownish colour and iridescent, very hairy, anterior 5 mm. Nervures dilute sepia, the first and third intercubitus much bent at apex, the basal straight, and running beyond the nervulus; cells: first cubital large, second and third cubitals small, subequal, contracted at apex; the radial cell rounded on the costa; pterostigma dilute sepia; hamuli seven in number, and of weak development.

Locality.—Townsville, Queensland (C. Barrett, August, 1920).

Allies.—Not close to the unique *N. australensis* Perkins, which has a white stripe on the clypeus, pallid spots on the tubercles, and a white stripe on the legs. I have not seen the genotype, but the neururation of the wings seems to agree.

Nothing is known of the life-history of these bees, but the anatomy of the creatures stamps them as reed-dwellers. Collected by Mr. Chas. Barrett. The species is dedicated to Jan Rubini, the musician.

#### Division APIFORMES (Social Bees).

#### Family APIDAE.

#### Subfamily MELIPONINAE.

#### TRIGONA COCKERELLI, sp. nov.

(Text-fig. 8.)

*Worker*.—Length, 5 mm. approx.

Head wide, bright, densely and finely punctured, with numerous appressed short white hairs, black; face-marks confined to a dull-white spot at the bases of the anterior orbital margins; frons large, with minute even puncturing, and appressed short white hair; clypeus similar to frons in sculpture, with a transverse dull white



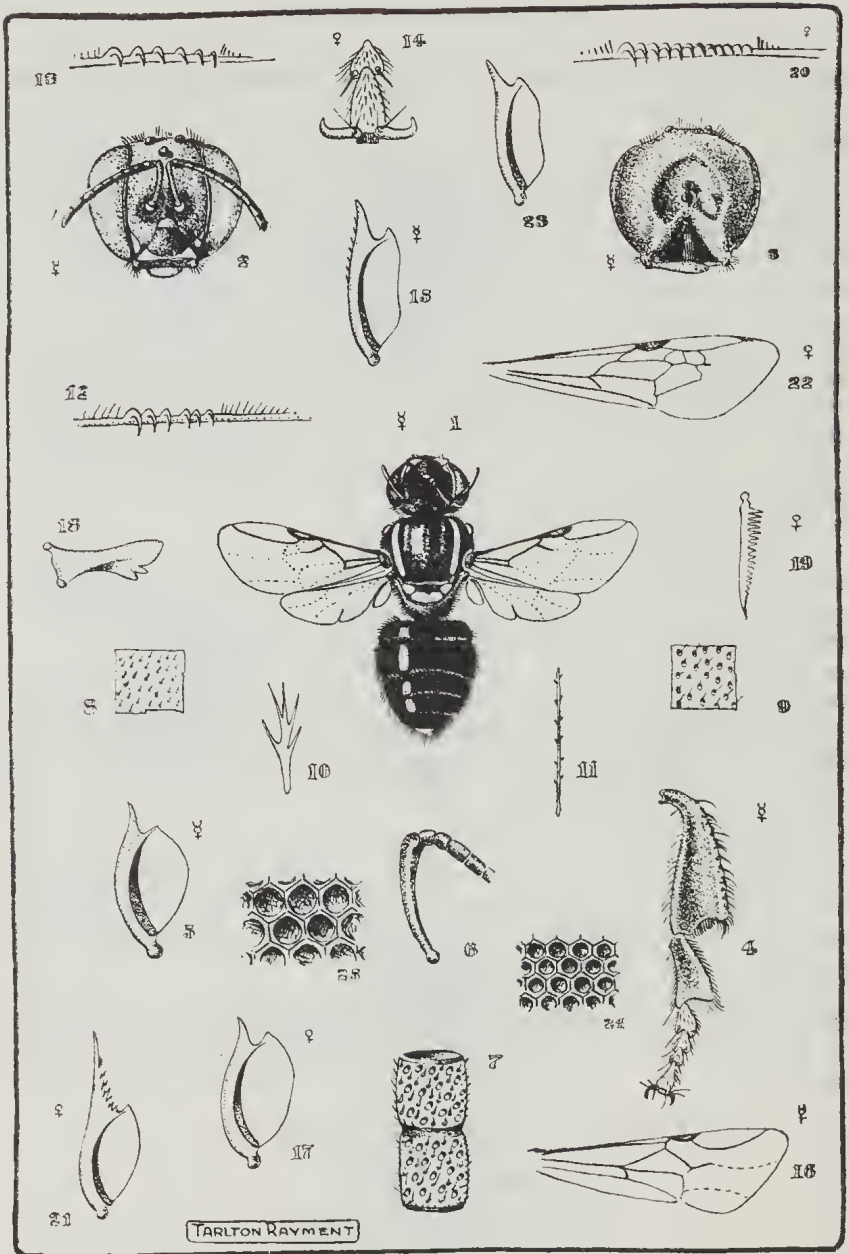


FIG. 8.

1. Adult worker of Australian social bee, *Trigona cockerelli*, sp. nov. (legs not shown). 2. Front view of head-capsule. 3. Posterior view of head-capsule of *T. carbonaria* Sm. 4. The hollowed tibia and tarsi of *T. Cockerelli*. 5. Strigil of the anterior leg. 6. Scape showing small cavity at apex; compare this with that of *Microglossa* Raym. 7. Segments of flagellum, showing pore and peg organs. 8. Minute hairs on wings. 9. The punctate sculpture of the mesothorax. 10. A forked hair from the face. 11. A fine plumose hair from the leg. 12. Hamuli or small wing-hooklets. 13. Hooklets from African social bee, *T. zebrae* Friese. 14. Claw segment of female (queen) *T. carbonaria* Sm. 15. Strigil of the South American social bee *T. capitata* Sm. 16. Anterior wing of the worker. 17. Strigil of female (queen) *T. carbonaria* Sm. 18. Mandibles of worker. 19. Hind tibial spur of South African Colletid bee. 20. Hamuli or wing-hooklets. 21. Strigil or antenna-cleaner. 22. The neurulation of the wing is of Colletid type. 23. Strigil of South African social bee, *T. denoiti* Vachel. 24, 25. Cells of hive-bee *Apis* compared with those of *Trigona*.

median band which is dilated laterally into large triangular ends, convex; supraclypeal area with a wide, dull-white crescentic mark; vertex roundly developed, the clear glassy ocelli in a curve; compound eyes claret-brown, converging slightly at base and apex; genae with numerous short appressed white hairs; labrum dull-white; a distinct malar space; mandibulae black at bases, reddish apically, the median portion dull-white; antennae submoniliform, the scapes dull-white in front, flagellum fulvous beneath, dark above.

Prothorax black, not visible from above; tubercles cream, shaded to fulvous, a short fringe of white hair; mesothorax black, bright, with minute even puncturing, minute white hair, a narrow creamy stripe laterally from the prothorax to the scutellum; scutellum black, with a large cream dot laterally, and a large emarginate fulvous mark, a few long white hairs; postscutellum black, hidden; metathorax black, with a large scale-like sculpture, bright; abdominal dorsal segments highly polished, black, hind margins broadly reddish; ventral surface similar, with a whitish fringe on margins.

Legs black, with a whitish dot on median and anterior knees, and trochanters, the hind tibiae and basitarsi very broad and deeply concave on exterior surface, white hair; tarsi reddish-amber, with fulvous hair; claws reddish; empodium large; hind calcaria absent; tegulae dull, with drab patches and short white hair; wings hyaline, iridescent, anterior 3 mm.; the posterior with a large anal lobe; nervures pale-amber, basal arched and meeting nervulus, recurrents and intercubitals obsolete, only the basal stump of the cubitus being visible; cells: radial, long and narrow, the cubitals and discoidals are all confluent; pterostigma pale-amber, distinctly margined with a nervure; hamuli six in number, of weak development.

Locality.—Borroloola, North Australia (Gerald Hill, 25th September, 1911). Type in the National Museum.

Allies.—*T. essingtoni* Ckll., which has a pale yellow mark, and two reddish-brown dots on clypeus, and a yellow scutellum; *T. cassiae* Ckll., which has different markings on clypeus and scutellum, and narrow lateral facemarks. The species is dedicated to Professor Cockerell, my mentor in Taxonomy.

Biological Data.—These social bees construct small horizontal brood-combs, the mouths of the cells being at the bottom. The honey-pots are large, and grouped on the circumference of the brood-combs; they are irregular spheres. The queen-larvae do not receive any "super-food," like those of *Apis*, but are reared solely on honey and pollen. Dr. Tillyard has stated that no social bee has a tibial spur, but it is present in *Bombus*, although wanting in the present genus. I have received a bee from the museum at Bulawayo, Africa, labelled "*Trigona beckeri* Friese. Id. Stevenson," but it is a Colletid bee; the wings and strigil are shown in the drawing.

## A Correction.

In the immediately preceding issue of these Proceedings I erected the genus *Melitribus*. This was further discussed by me in the *Vic. Naturalist*, May, 1930, where I supplanted the genera *Stenotritus* and *Gastropsis*. I find my action is not in accordance with the rules of nomenclature and the law of priority. It is now definitely proved that the species contained in the genus *Gastropsis* are merely the males of the genus *Stenotritus*. The latter was founded some fifteen years before *Gastropsis*, and must, therefore, stand. Two well-defined groups are represented in the material at my disposal, and I therefore take this opportunity of correcting my error. Group 1 may be retained in Smith's genus *Stenotritus*, the species of which are tabulated below. Smith's description of *Stenotritus*, from an incomplete specimen, is so meagre that I did not regard it as sufficient; indeed, Smith himself had doubts about it. The following characters will serve to distinguish this genus:

Large hairy bees of dull metallic or submetallic green or yellow colour; the head wide; the ocelli well forward; the glossa short and wide; the paraglossae long; the second joint of the flagellum long; the females with a naked area on the apical segment the calcaria of the median and hind legs strongly toothed. The males smaller, very hairy, with a short shovel-shaped abdomen; the malus of the strigil double-curved, acute, very long; the velum being very short with a concave edge. The males have a superficial resemblance to *Anthophora*.

*Stenotritus* Smith.

Cat. Hym. Brit. Mus., p. 119, 1853.

*Gastropsis* Sm., Trans. Ent. Soc. Lond., p. xxxix, 1868.

Genotype, *S. elegans* Smith.

*elegans* Smith.

var. *A.* Ckll.

*elegantior*, Ckll.

*glauerti*, Raym. (*Melitribus*).

*pubescens*, Sm. (*Gastropsis*).

var. *nigrescens* Friese (*Gastropsis*).

var. *splendida* Raym. (*Gastropsis*).

*smaragdinus* Sm.

The remaining species I have retained in the genus *Melitribus*. These may be distinguished from *Stenotritus* as follows:—

Large black highly polished, but not metallic bees; the head circular; the compound eyes almost holoptic; the ocelli nearly at the level of the insertion of the antennae; the glossa short and wide; the paraglossa short; the second joint of the flagellum long; no naked area on abdomen, which is long and parallel-sided; the exceedingly thick malus of the strigil is truncated, and has a simple

curve; the velum being large and straight on the edge. The males have a superficial resemblance to *Megachile*.

**Melitribus** Rayment.

Proc. Roy. Soc. Vic., n.s., xlii (2), p. 217, 1930.

Genotype, *M. victoriae* Ckll.

*greavesi* Raym.

*victoriae* Ckll. (Gastropsis).

var. *rufocollaris* Ckll. (Gastropsis).

var. A. Ckll. (Gastropsis).